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Exercise Caution with ChAdOx1 COVID-19 Vaccination in Chronic Budd-Chiari Syndrome with a Thrombophilic Genetic Predisposition

Thromboembolic complications are known with ChAdOx1 nCoV-19 vaccine.^{1,2} However, there are no reports of thrombotic events in patients with Budd-Chiari syndrome (BCS) or chronic liver disease. Here we report the first case of massive splenoportal axis thrombosis post-ChAdOx1 nCoV-19 vaccine in a patient with BCS.

A 46-year-old male was diagnosed with chronic BCS 2.5 years back when he developed ascites. He was also detected to be positive for JAK2 positive myeloproliferative neoplasm. He underwent direct intrahepatic portosystemic shunt (DIPS) on April 26 2019 (Figure 1). He was on hydroxyurea and warfarin 2 mg. His diabetes and hypertension were well under control. He underwent ChAdOx1 nCoV-19 vaccination after stopping warfarin for two days. His INR was 1.7 at the time of vaccination. Warfarin 2 mg was restarted on the first day postvaccination. He presented with severe abdominal pain seven days after vaccination. An abdominal Doppler study revealed no flow in the DIPS stent. Contrast-enhanced computed tomography revealed a completely thrombosed portal vein, splenic vein, and DIPS stent. There were no other complaints to suggest bowel ischemia. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) polymerase chain reaction test was negative, and screening chest computed tomography was

normal. He underwent immediate thrombolysis plus venoplasty. Despite two attempts, we could not achieve complete clearance of the vein or stent. He was treated with low molecular weight heparin and later switched to dabigatran. His symptoms, however, improved, and he was discharged nine days later. He never had symptomatic COVID-19 infection during the pandemic, and his platelet counts remained normal throughout the course, with the lowest value of 1.5 lakhs/ml. Antiplatelet factor (PF) 4 antibodies were negative.

This is the first report of a thrombotic event in a patient with BCS. The patient developed extensive thrombosis despite being on anticoagulants. We could achieve partial clearance of the thrombus. It may be argued that withholding warfarin in a procoagulant disease may itself have led to thrombus formation. However, it is known that warfarin has a long duration of action (five days).³ Furthermore, the patient developed extensive thrombosis two years after the first event, which was after vaccination.

Thrombotic events postvaccination are usually fatal and lack effective therapies.¹ Multiple hypotheses are proposed for the postvaccination thrombotic events.² One of the most favored hypotheses is the development of anti-PF 4

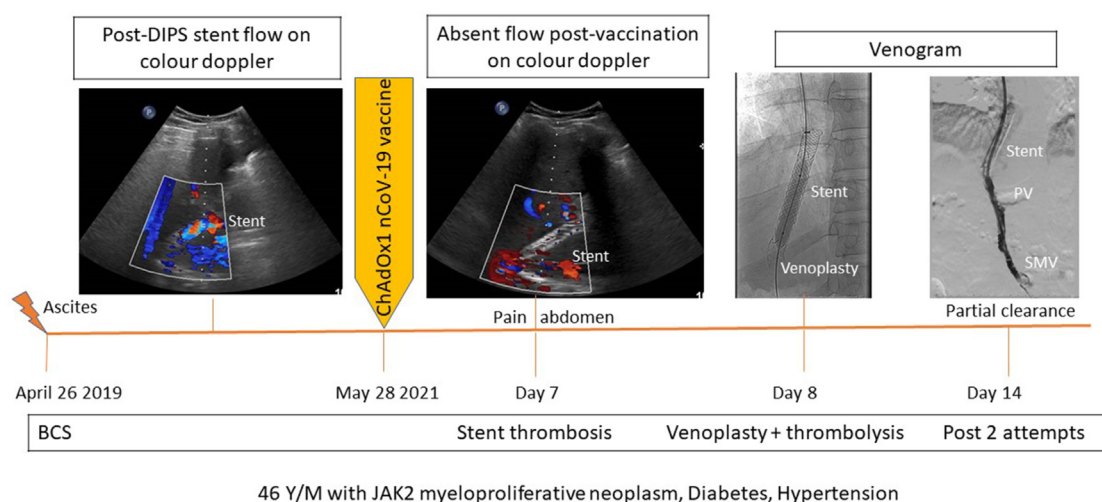


Figure 1 Timeline of events. DIPS-direct intrahepatic portosystemic shunt; BCS- Budd-Chiari Syndrome, PV-portal vein, SMV-superior mesenteric vein.

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antibodies induced by a vaccine component through exposure to a polyanionic macromolecule.^{4,5} However, thrombotic events can occur even in the absence of anti-PF 4 antibodies for unknown reasons.⁶ Large scale vaccination programs are the only way to overcome the devastating pandemic. However, caution should be exercised in patients with pre-existing thrombotic disorders to prevent thrombus recurrence.

Key messages for patients on warfarin⁷⁻⁹:

- ✓ Check INR prior to planned vaccination (preferably within 72 h).
- ✓ If INR is within the therapeutic range, then proceed with vaccination.
- ✓ Patients on warfarin with supratherapeutic INR should wait until their INR is < 4
- ✓ A firm pressure, without rubbing, at the injection site should be maintained for 2–5 min.
- ✓ Do not stop anticoagulants during/after the COVID-19 vaccination.
- ✓ Monitor for at least 4–7 days following vaccination for new symptoms.
- ✓ Vaccines are safe and must be recommended for all.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Anand V. Kulkarni: Conceptualization, Writing - original draft. **Jignesh Reddy:** Conceptualization, did the procedure. **Jagdeesh R. Singh:** did the procedure. **Vivek Sreekanth:** did the procedure. **Arjun Reddy:** did the procedure. **Mithun Sharma:** Writing - review & editing, critical appraisal. **Chandrashekar Nutalapati:** Writing - review & editing, critical appraisal. **Padaki N. Rao:** Writing - review & editing, critical appraisal. **Duvvuru N. Reddy:** Writing - review & editing, critical appraisal.

CONFLICTS OF INTEREST

The authors have none to declare.

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